

CLAIMS

1. Pulper device for waste paper material, characterized in that it comprises:

- 5 - a container (9) for collecting said waste, having an inlet opening (11) for said waste;
- at least one pressurized water nozzle (13; 15) which produces a jet of water which intercepts the waste which falls into said container,
- and a first pump (27) which removes the water and the waste from said container.

10 2. Device according to claim 1, characterized in that it comprises a first series (11) of pressurized water nozzles and a second series (13) of pressurized water nozzles, the jets produced by the nozzles of the first series and the nozzle jets produced by the second series having trajectories which intersect in a zone where said waste falls.

15 3. Device according to claim 2, characterized in that said nozzles have trajectories with different inclinations.

4. Device according to claim 2 or 3, characterized in that two inclined surfaces (21, 23) for guiding the jets produced by the nozzles are associated with said first series (11) and said second series (13) of
20 nozzles.

5. Device according to claim 4, characterized in that said inclined surfaces are oriented approximately parallel to the trajectory of the jets produced by the respective nozzles.

25 6. Device according to claim 4 or 5, characterized in that each of said surfaces extends from the respective series of nozzles as far as a respective terminal edge (21A, 23A), the terminal edges of said two surfaces delimiting a passage for conveying the water and the waste paper material.

30 7. Device according to claim 4, 5 or 6, characterized in that said surfaces are flat.

8. Device according to one or more of the preceding claims, characterized in that said container has an elongated longitudinal

extension, the inlet opening extending in the longitudinal direction of extension of said container.

5 9. Device according to one or more of claims 2 to 8, characterized in that said container has an elongated upper opening, parallel to which said first and said second series of nozzles extend.

 10. Device according to one or more of the preceding claims, characterized in that said first pump (27) is a chopper pump.

10 11. Device according to one or more of the preceding claims, characterized in that it comprises a recirculation duct (29A) between said first pump (27) and the container (9), by means of which a part of the flow sucked in by said first pump is recirculated inside said container.

 12. Device according to claim 11, characterized in that the outlet of said recirculation duct (29A) is situated in a position approximately opposite an intake opening (25) of said first pump.

15 13. Device according to at least claims 8 and 12, characterized in that the outlet of said recirculation duct (29A) and the intake opening of said first pump are arranged approximately at the ends of the elongated longitudinal extension of said container.

20 14. Device according to claim 12 or 13, characterized in that the bottom of said container is inclined downwardly and from the outlet of said recirculation duct toward the intake opening of said first pump.

 15. Device according to one or more of the preceding claims, characterized in that said container is connected to a suction duct (51) which sucks air from inside said container (9).

25 16. Device according to at least claims 4 and 15, characterized in that said suction duct (51) has suction openings (55) arranged underneath at least one of said two inclined surfaces.

30 17. Device according to claim 15 or 16, characterized in that said suction duct is connected to a separator (53) for separating air from solid and/or liquid particles entrained in the air flow.

 18. Device according to one or more of the preceding claims, characterized in that it comprises a thickening station (35) to which at

least partly the mixture of water and waste paper material sucked by said first pump is conveyed and inside which the solid content of the mixture is increased, eliminating therefrom a part of the water content.

5 19. Device according to claim 18, characterized in that a second pump (31), which conveys the flow sucked by said first pump, less the recirculation flow, toward said thickening station (35), is arranged along the delivery duct of said first pump (27).

10 20. Device according to claim 18 or 19, characterized in that the mixture leaving said thickening station is conveyed to a container for subsequent conveying to a headbox associated with the paper production line and the water separated from said mixture is recycled.

15 21. Method for recovering and recycling waste paper material supplied from a paper production line, characterized in that said waste is subjected to a pulping action by means of one or more pressurized water jets so as to produce a mixture of water and waste paper material and in that said mixture is recycled.

20 22. Method according to claim 21, characterized in that said waste is reduced to pulp, not only by the action of said one or more pressurized water nozzles, but also by suction of a water flow containing said waste using a chopper pump.

23. Method according to claim 21 or 22, characterized in that said waste is passed between a first and a second series of pressurized water nozzles, the jets produced by said first and said second series of nozzles intersecting each other.

25 24. Method according to one or more of the preceding claims, characterized in that said waste is sucked into a container kept under a vacuum.

30 25. Method according to claim 24, characterized in that said container is kept under a vacuum by sucking air from inside it to underneath a surface guiding one or more jets of water produced by said pressurized water nozzles.

26. Method according to claim 25, characterized in that an air

flow sucked from said container is generated, and water and any solid particles are separated from said flow, said water and said solid parts being recycled.

- 5 27. Method according to one or more of claims 21 to 26, characterized in that the solid-matter content of said mixture is increased by means of partial separation of the water contained therein and in that the mixture thus treated is introduced again into the paper production cycle and the separated water is recycled into the paper production plant.